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(x_1, px_1, h) , $(x_2, -px_2, -h)$ and (α, β, γ) be the vertices of an equilateral triangle of side L and there will be three expressions for L^2 which give the three equations

$$(1 + p^2)(x_1^2 + x_2^2) - 2(1 - p^2)x_1x_2 = L^2 - 4h^2,$$

$$(1 + p^2)x_1^2 - 2(\alpha + p\beta)x_1 = L^2 - \alpha^2 - \beta^2 - (\gamma - h)^2,$$

$$(1 + p^2)x_2^2 - 2(\alpha - p\beta)x_2 = L^2 - \alpha^2 - \beta^2 - (\gamma + h)^2.$$

Eliminating x_1 and x_2 from these three equations, we have an equation of the fourth degree in L^2 with coefficients which are functions of α, β, γ .

NOTE BY THE EDITORS.—There are an infinite number of solutions in (a) when the lines are not parallel, as well as when they are parallel. This may be shown as follows: draw an equilateral triangle ABC with A on l_1 and B on l_2 . With a given position of AB , the vertex C may lie on either side of AB . One at least of the straight lines OC will cut l_3 in the point C' , unless these are both parallel to l_3 and so the same line, and this can be avoided by shifting the position of the triangle. The lines $C'A'$ and $C'B'$, drawn from C' to l_1 and l_2 , parallel respectively to CA and CB , will be two sides of the triangle $A'B'C'$ which is equilateral and satisfies the conditions of the problem. The triangles $A'B'C'$ for different triangles ABC will vary in size, for if they were all equal the locus of C' would be an ellipse and not the line l_2 .

In (c) the construction is not always possible. If, for example, the given point is at the origin, $\alpha = \beta = \gamma = 0$, then $x_2 = \pm x_1$, and $L^2 = 4h^2/(1 - 3p^2)$ or $4p^2h^2/(p^2 - 3)$. It is necessary in this case, therefore, that the acute angles between the projections of the two lines shall be less than 60 degrees.

NOTES AND NEWS.

It is hoped that readers of the **MONTHLY** will coöperate in contributing to the general interest of this department by sending items to **H. P. MANNING**, 69 Weymouth St., Providence, R. I.

Miss MAY J. SPERRY, of Knox College, has been appointed instructor at the University of Syracuse.

Miss MARGARET C. PACKER, of Brown University, has been appointed instructor at Hood College, Fredericksburg, Md.

Miss FRANCES M. MERRIAM, of Brown University, has been appointed instructor of mathematics at Wellesley College.

Assistant professor J. W. HARRELL, of Baylor University, Waco, Texas, is on leave of absence studying at Brown University.

MARCUS SKARSTEDT, of Augustana College, has been appointed professor of mathematics in Whittier College.

Miss MINNIE W. CALDWELL has been appointed head of the department of mathematics in Chowan College, Murfreesboro, N. C.

Associate Professor E. L. DODD will teach at Williams College during 1922–1923 on leave of absence from the University of Texas.

C. G. SIMPSON, of the Carnegie Institute of Technology, has been appointed professor of mathematics in the Milwaukee College of Electrical Engineering.

J. G. FOWLKES has been made assistant professor of education in the University of Wisconsin.

R. L. CHARLES, associate professor of physics at Lehigh University, has been appointed professor of physics and electricity at Franklin and Marshall College.

At Brown University, W. R. BURWELL, of the University of Tennessee, has been appointed assistant professor of mathematics and dean of freshmen; J. H. FITHIAN, of Taft School, Watertown, Conn., and H. C. HICKS, of the University of Chicago, have been appointed instructors.

Dr. F. C. TOUTON, lecturer in secondary education at the University of California, has been appointed associate professor of education at the University of Southern California. Dr. Touton is joint author of the Hawkes, Luby and Touton mathematical text-books.

Professor GLENN JAMES, of Carnegie Institute of Technology, has been appointed assistant professor of mathematics in the Southern Branch of the University of California, and Dr. F. C. LEONARD has been appointed instructor of mathematics and astronomy, in charge of the work in astronomy.

Professor W. J. RISLEY, of James Millikin University, has been appointed professor of mathematics in the Colorado School of Mines, and Mr. J. R. EVERETT, of Carnegie Institute of Technology, has been appointed assistant professor (see 1921, 286).

F. A. WELLS, instructor of mathematics at the United States Naval Academy, has been appointed instructor of mathematics at the University of Virginia.

J. E. DAVIS, instructor of mathematics at the University of Wisconsin, has been appointed assistant professor of mathematics at the University of Arkansas.

CLAIR REID, instructor of mathematics at Purdue University, has been appointed instructor at the University of Michigan.

T. B. HENRY, instructor of mathematics at the University of Kansas, has been appointed head of the department of mathematics in Highland College, Kansas.

Professor J. M. HOWIE, for twenty-four years head of the department of mathematics at the Nebraska State Teachers College, has been appointed professor of mathematics at Alma College.

Miss MARTHA P. McGAVOCK, of Sullins College, has been appointed instructor of mathematics at Wellesley College.

Professor OSWALD VEBLEN, of Princeton University, has been granted leave of absence for the second semester of 1922-1923 and is to spend it in Europe.

Dr. C. E. STROMQUIST, of the University of Wyoming, is on leave of absence in California, necessitated by his ill health. Professor H. C. GOSSARD, who during the past two years has been engaged with the Y. M. C. A., has been appointed acting chairman of the department of mathematics.

In the mathematics department of the State College of Iowa, leave of absence during 1922-1923 has been granted to Associate professor JULIA T. COLPITTS to study at Cornell University, and Assistant professor E. C. KIEFER to study at the University of Michigan.

At the University of Colorado, Assistant professor G. H. LIGHT has been promoted to a full professorship of mathematics and Dr. CLARIBEL KENDALL to an assistant professorship.

At the University of Maine N. R. BRYAN has been appointed associate professor of mathematics for the year 1922-1923 in place of Professor L. S. HILL, who has been granted leave of absence and will study and act as instructor at Yale University.

Associate Professor EMMA L. KONANTZ, of Ohio Wesleyan University, has been

granted an extended leave of absence and in January will resume her teaching in Peking University and her study of early Chinese mathematics (see *1921*, 402; *1922*, 195).

Dr. J. D. BOND, of Louisiana State University, has been appointed associate professor of mathematics in the University of Tennessee. (See *1921*, 403.)

Professor W. E. PATTEN, of the Government Institute of Technology of Shanghai, a charter member of this Association, has been made professor of hydraulic engineering in Tangshan College, Tangshan, North China.

Dr. H. C. M. MORSE and Dr. W. L. G. WILLIAMS have been promoted to assistant professorships at Cornell University.

Dr. E. B. WILSON, professor of mathematical physics at the Massachusetts Institute of Technology, has been appointed professor of vital statistics at Harvard School of Public Health.

At the University of Kansas, Dr. U. G. MITCHELL was advanced to a full professorship for the year 1920–1921, and Dr. E. B. STOUFFER for the year 1921–1922.

At the University of Minnesota, Professor A. L. UNDERHILL has been granted a sabbatical leave of absence for the year 1922–1923. He expects to study in France. Mr. H. W. CHANDLER, of the University of Iowa, has been appointed instructor of mathematics.

At the Western College for Women, Oxford, Ohio, Miss Hazel E. SCHOON-MAKER, of Gulf Park College in Mississippi, a graduate of Wellesley and an M. A. of Radcliffe, has been appointed head of the department of mathematics. Compare *1921*, 332.

At the University of Washington, Dr. E. T. BELL has been promoted to a full professorship, and Dr. L. L. SMAIL to an assistant professorship. Dr. HERMANCE MULLEMEISTER has been granted leave of absence for the year 1922–1923, which he will spend in Holland in study and research. Miss ECHO D. PEPPER, of the University of Washington, will take his place.

At the University of Michigan, Assistant Professor R. B. ROBBINS has returned for the year 1922–1923 after an absence of two years, during which period he has served as assistant actuary in the Insurance Departments of the State of Missouri and the State of New York. Mr. R. V. CHURCHILL, of the University of Chicago, has been appointed instructor of mathematics in the Engineering Department. Mr. C. C. CRAIG, of Indiana University, has been appointed instructor of mathematics in the College of Literature, Science and the Arts.

Professor C. H. RICHARDSON, of Georgetown University, Kentucky, taught in the summer session of the University of Michigan for 1922.

At Yale University, Assistant Professor LEIGH PAGE, of the department of physics, has been promoted to a full professorship of the mathematical sciences, with assignment to the Sheffield Scientific School and Dr. W. L. CRUM has been promoted to an assistant professorship of mathematics.

On account of ill health, Professor E. W. BROWN, of Yale University, had to give up his mathematical work about November 1. His advanced courses are to be conducted during the present year by Professor G. D. BIRKHOFF, of Harvard University.

FREDERICK ANDEREGG, professor of mathematics, emeritus, at Oberlin College since 1920 (compare 1920, 336), died October 9, 1922. He was born in Meiringen, Switzerland, June 11, 1852, and was brought to America when ten years of age. Graduating A.B. from Oberlin in 1885, he was tutoring mathematics there 1885–1888. During 1888–1890 he was at Harvard (A.M. 1889) as a graduate student, and as instructor in mathematics during the latter year. Appointed associate professor of mathematics at Oberlin in 1890, he became professor in 1892. During 1903–1904 he studied at the University of Berne. Professor Anderegg's mathematical publications were not extensive. His pamphlet, *Algebra Problems introductory to College Mathematics* (Boston and New York, 1891), contained graded exercises for freshmen followed by examination papers from Harvard and Oxford, 1884–1886. A little article, "A perfect magic square," appeared in this MONTHLY, 1905, 195–196. In collaboration with E. D. Roe, Jr., he was the author of *Trigonometry for Schools and Colleges* (Boston, 1896; revised edition, 1913). He was a charter member of the Association, had been a member of the American Mathematical Society since 1911, and was a member of the Swiss Alpine Club.

Mrs. SOPHIE (WILLOCK) BRYANT, aged 72, met her death by accident near Chamonix, Switzerland, some time between August 15 and August 28, 1922, when her body was found by Alpine hunters. She was born in Dublin and educated privately and at Bedford College, London, where she graduated with mathematical and moral science honors in 1881. She took the degree of doctor of science in moral sciences, being the first woman in the British Isles to take that degree. She was married at the age of 19 to Dr. William Hicks Bryant, of Plymouth, and after his death a year later renewed her work as a student and became mathematical mistress at the North London Collegiate School for Girls. From 1885 she was head mistress of this school until 1918, when she retired. She wrote many educational, religious, and scientific articles and articles on Ireland and the Irish language. She collaborated with Charles Smith in preparing an edition of Euclid's *Elements*, Books I to IV, VI, and XI (London, 1901) and a key to the same (London, 1902).

PIERRE JEAN BAPTISTE HENRI BROCARD, whose constant and valuable contributions have long been a prominent feature of *L'Intermédiaire des Mathématiciens*, and many other periodicals, died at his home in Bar-le-Duc, France, January 16, 1922. He was born only a short distance away, at Vignot, on May 13, 1845. A student of the Ecole Polytechnique, 1865–1867, he rose to the rank of lieutenant colonel of the territorial engineers (Génie territorial). In 1874 he was appointed in charge of the government meteorological service in Algiers. The list of his publications relative to meteorology, climatology, rural economics and hygiene, and natural sciences, 1860–1894, occupies over 60 printed pages. For the same period the printed list of his publications in physics and chemistry occupies 26 pages, and in pure and applied mathematics, and astronomy, 72 pages. These lists, preceded by a synopsis of his scientific activities, were issued, in 1895, in one volume at Bar-le-Duc, where he spent the last thirty years of his life. His very numerous contributions to the literature of mathematics were mainly

in connection with the geometry of the triangle (Brocard point and Brocard circle are well-known terms), history, and bibliography. In 1897–1899 he published and distributed at his own expense the very valuable *Notes de Bibliographie des Courbes Géométriques* (344 + 243 pages), now being elaborated into *Courbes Géométriques Remarquables (Courbes Spéciales) Planes & Gauches* by H. Brocard and T. Lemoyne, of which the first volume was published in 1919 (see 1920, 130; 1921, 218); the other two volumes are ready in manuscript but publication has so far been delayed by prohibitive cost of the same. Brocard's library was left to his friend André Gérardin, the editor and publisher of *Sphinx Edipe*.

JACOBUS CORNELIUS KAPTEYN, born at Barneveld, Holland, January 19, 1851, died June 18, 1922. After taking his doctorate at the University of Utrecht in 1875 he became an observer at the observatory in Leyden. Since 1878 he had been professor of astronomy and mechanics at the University of Groningen. Among his very numerous publications, possibly those of chief interest to the mathematician are on "Skew frequency curves in biology and statistics" (Groningen, 1903 and 1916). Kapteyn visited Mount Wilson Observatory in 1910, and later, and a number of his astronomical papers are published in *Contributions from the Mount Wilson Observatory*, 1909–1920. Professor P. J. van Rhijn has been appointed his successor.

ERNEST RUDOLF KÖTTER, born in Berlin, Germany, August 7, 1859, died January 26, 1922. He took his doctorate at the University of Berlin where he was privatdozent for a number of years. From 1897 to the time of his death he was professor of descriptive geometry and graphical statics at the polytechnic school in Aix-la-Chapelle (Aachen). He is probably best known to mathematicians by his admirable report (28 + 486 pages), *Die Entwicklung der synthetischen Geometrie von Monge bis auf Staudt* (1847), which first appeared in *Jahresbericht der deutschen Mathematiker Vereinigung*, volume 5.

AXEL THUE, born in Tønsberg, Norway, February 19, 1863, died March 7, 1922. He received his education at the University of Christiania and was appointed a teacher in the technical school at Dortheim in 1894. In 1903 he was appointed professor of applied mathematics at the University of Christiania. His many published papers have been almost wholly in connection with problems of Diophantine analysis and other topics in the theory of numbers. Many of his results are listed in Dickson's *History of the Theory of Numbers*, volumes 1 and 2. In particular he found a general theorem applying to a particular problem discussed in this MONTHLY (see 1921, 124; and 1922, 159), namely the solutions of the equation $x^2 - y^3 = 17$.

Professor G. A. MILLER, of the University of Illinois, has been made an honorary member of the Indian Mathematical Society, together with Professor G. H. HARDY, of New College, Oxford, and Dr. G. T. WALKER, director-general of observations in India.

In April 1922 Professors W. F. OSGOOD and G. D. BIRKHOFF were elected corresponding members of the Royal Society of Sciences at Göttingen,

mathematical physical class. The list of corresponding members published in 1920 contains 80 names, including the following Americans: L. A. BAUER, Washington, D. C.; J. M. CLARKE, Albany, N. Y.; WILLIAM HILLEBRAND, Washington, D. C.; and R. W. WOOD, Baltimore, Md.

The gold medal of the Royal Astronomical Society has been awarded to J. H. JEANS, sometime professor of applied mathematics at Princeton University, for his contributions to the theory of cosmogony. Professor Jeans has already received one medal, awarded to him in 1919 by the Royal Society of London (see 1920, 46).

E. T. WHITE, mathematics master of the London, Ontario, Normal School, was awarded the degree of doctor of pedagogy by the senate of the University of Toronto at its meeting on March 10.

The honorary degree of doctor of science was conferred upon Professor A. G. WEBSTER, of Clark University, at the commencement exercises of Princeton University.

A mathematical meeting and dinner in honor of Professor CHARLOTTE ANGAS SCOTT, on the completion of her thirty-seventh year as head of the department of mathematics in Bryn Mawr College, was held April 18, 1922, by Professor Scott's former students. The exercises consisted of an address of welcome by President M. CAREY THOMAS, an introductory address by Miss MARION REILLY, 1901, and a lecture by Professor A. N. WHITEHEAD, professor of applied mathematics in the Imperial College of Science, South Kensington, on "Relativity and gravitation, Group tensors and their application to the formulation of physical laws." After the lecture a tea was served at the deanery to about 200 guests.

At the dinner there were present former students, members of the American Mathematical Society, and members of the Bryn Mawr College faculty. Miss MARION REILLY acted as toastmistress. The speakers were: Professors E. H. MOORE, FORENCE BASCOM of Bryn Mawr, JAMES HARKNESS of McGill, E. W. BROWN, FRANK MORLEY, and A. N. WHITEHEAD. Professor Scott gave a response with an expression of appreciation. In regard to Professor Scott's service to Bryn Mawr College, Professor Bascom said in part, "It is this wisdom impartial, rational, creative, articulate, that Dr. Scott possesses in a marked degree. This is the quality which makes her judgment the one sought on all important faculty matters."

The honorary committee consisted of Professors R. C. ARCHIBALD, G. D. BIRKHOFF, E. W. BROWN, F. N. COLE, J. A. EIESLAND, JAMES HARKNESS, E. R. HEDRICK, FLORENCE P. LEWIS, Dean ISABEL MADDISON, Professors EMILIE N. MARTIN, HELEN A. MERRILL, E. H. MOORE, FRANK MORLEY, L. W. REID, R. G. D. RICHARDSON, E. J. TOWNSEND, OSWALD VEBLEN, H. S. WHITE, and RUTH G. WOOD.